REMARKS

Prior Art Rejections

The Examiner has rejected claim1 as being anticipated by Birnahk, U.S. Patent No. 6,400,813 and claims 6-20 as being anticipated by Farris, U.S. Patent No. 5,802,145. Claims 2-4 were rejected as obvious under 35 USC §103 over Birnhak in view of Pester, III, U.S. Patent No. 5,475,732.

In response to these rejection, the applicant has amended the three independent claims. Claim 1 now requires a second probe "having a buffer for the temporary storage of signaling link messages." This second probe examines the buffer "to look for signaling link messages that were placed in the buffer before the second probe received the trigger." Similarly, the method of claim 6 now requires that the second probe place detected signaling messages in storage, and then requires the step of "discovering signaling messages detected by the second probe before the second probe received the trigger message by examining the signaling messages in the storage for messages related to the telephone number criteria." Newly amended claim 12 has a similar limitation, include a "means for detecting signaling messages at the at least one other probe based on the detecting criteria and time stamp even where signaling messages were received by the probe before the broadcast was received by the probe."

As defined by the newly amended claims, the present invention allows SS7 signaling messages to be assembled in real-time. The problem with the prior art is that SS& messages can be transmitted through the signaling network through a variety of physical paths. Thus, numerous physically separated probes are required to detect all of the standard messages that are used to set-up and release trunk circuits. For instance, when the initial (IAM) message is transmitted and detected by a probe, the ACM and ANM messages that establish a phone connection may not pass by the same probe. One solution to this problem is proposed by Birnhak, in which numerous probes analyze the signaling network and send ***all*** detected messages back to a host processor. The host processor accumulates the messages, such as in a massive database, and then sorts through and organizes the related messages to allow a user to see the messages relating to a particular phone connection. Unfortunately, because all data must be transmitted to a single location for analysis, such analysis cannot occur in real time.

To allow real-time monitoring, other approaches utilize a "trigger" that is sent by one probe to other probes to search for particular messages. These triggers indicate that

the initial IAM message has been detected, and the probes should then search for the ACM and ANM messages relating to this call. Unfortunately, the ACM message is typically transmitted only 100 ms after the IAM message, meaning that the trigger sent to the probes must be sent, received, and understood within this limited time frame. This generally required the use of fast, dedicated connection links between the probes for processing these triggers, since the use of standard TCP/IP network messages might be too slow to meet this time requirement.

The present invention overcomes these difficulties by having the probes store incoming messages in a buffer or other storage. When a trigger is received, the timeframe by which the ACM message should be detected may have already passed. The buffer can then be examined for messages within the appropriate time frame, and the related message can then be retrieved by the probe. This occurs even in circumstances where the probe received the trigger after the related message was detected by the probe. In this way, the present invention avoids the need to send all data to a host computer for batch processing, and avoids the need for dedicated, high-speed links between probes for trigger messaging.

None of the cited prior art references contain these features as claimed in the current independent claims. The Pester was cited for the presence of a buffer (col. 63, line 45 – col. 64, line 25. However, the buffer is Pester is a messaging buffer where messages are stored by priority and time, and then removed from the buffer in chronological order. There is no suggestion in Pester that this FIFO buffer could be used to overcome the above-identified problems in the SS7 signal monitoring prior art.

Similarly, the Farris reference uses a buffer to temporarily store signals so that they can be acted upon by a filter. Col. 9, lines 4-13. However, the process used in Farris first requires that the user send a signal to the monitors. That signal then sets the monitor to begin storing the messages in the temporary storage and to start the filtration process. Col. 9, lines 1-8. Thus, in Farris, the signal to start monitoring for a particular phone number occurs before any messages are stored in temporary storage. In effect, the temporary storage is used only to allow the filtration process to work at slightly less than real time. Farris is unable to have a monitor detect messages that were received by the monitor before the signal containing the filtering criteria was received, as is required by all of the pending claims in the present invention.

CONCLUSION

All of the claims remaining in this application should now be seen to be in condition for allowance. The prompt issuance of a notice to that effect is solicited.

Respectfully submitted,
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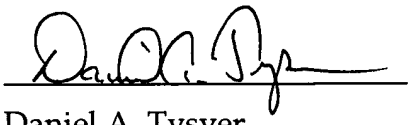
By its attorneys:

Date: 9 August 2004



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